

Evaluate

① $e^5 \approx 148.413$

② $2 - e^3 \approx -18.085$

Solve for x

③ $7^x = 12$ $x = \frac{\log 12}{\log 7}$
 $x \approx 1.2769$

④ $\log_3 x = 4$

$3^4 = x$
 $81 = x$

⑤ $\log_3 30 = x$

$3^x = 30$

$x = \frac{\log 30}{\log 3}$

$x \approx 3.0959$

⑥ $\frac{3e^x}{3} = \frac{42}{3}$

$e^x = 14$

$x = \frac{\log 14}{\log e}$

 $e = \text{natural base}$ $\ln = \log e$

~~\ln~~ $e^x = 14$
 \ln

$x = \ln 14 \approx 2.639$

8.2 #40

$$(a) 2000\left(1 + \frac{0.045}{4}\right)^{4x} \quad \text{after } 5 \text{ years } \$2501.50$$

on calc. $2000\left(1 + 0.045/4\right)^{(4 \cdot 5)}$

(b) continuously $y = Pe^{rt}$
 $y = 2000e^{(0.045 \cdot 5)} \approx 2504.65$

8,4 #62

$$\log_a x - \log_a y = \log_a \frac{x}{y}$$

$$\log(x-2) = \frac{\log(x)}{\log(2)}$$

False

67

$$\log_{\textcircled{2}} 3 + \log_{\textcircled{3}} 2 = \log_6 6$$

Different

False

(82)

$$\log \frac{\sqrt{x} \sqrt[3]{y^2}}{\sqrt[5]{z^2}} \Rightarrow \log \frac{x^{\frac{1}{2}} y^{\frac{2}{3}}}{z^{\frac{2}{5}}} = \log x^{\frac{1}{2}} + \log y^{\frac{2}{3}} - \log z^{\frac{2}{5}}$$

$$= \frac{1}{2} \log x + \frac{2}{3} \log y - \frac{2}{5} \log z$$

Do

$$\textcircled{1} \ln\left(\frac{x+2}{3}\right) = 12$$

$$\log_e\left(\frac{x+2}{3}\right) = 12$$

$$e^{12} = \frac{x+2}{3}$$

$$3 \cdot 162754.791 = \frac{x+2}{3} \cdot 3$$

$$\begin{array}{rcl} 488264.374 & = & x+2 \\ -2 & & -2 \end{array}$$

$$\boxed{488262.374 = x}$$

$$\textcircled{2} \begin{array}{rcl} e^{\frac{2x}{5}} + 7.2 & = & 9.1 \\ -7.2 & -7.2 & \end{array}$$

$$\cancel{e^{\frac{2x}{5}}} = \frac{1.9}{\ln}$$

$$5 \cdot \frac{2x}{5} = 0.642 \cdot 5$$

$$\frac{2x}{2} = \frac{3.209}{2}$$

$$\boxed{x = 1.605}$$

8.5

#23, 38-45, 85, 91, 95

8.6

#1-5, 14, 16, 19, 20, 23-29 (odd)